

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

<p>Applicant(s): Lester F. LUDWIG</p> <p>Serial No.: 09/812,400</p> <p>Filed: March 19, 2001</p> <p>Title: PROCESSING AND GENERATION OF CONTROL SIGNALS FOR REAL-TIME CONTROL OF MUSIC SIGNAL PROCESSING, MIXING, VIDEO, AND LIGHTING</p> <p>Group Art Unit: 2837</p> <p>Examiner: Marlon T. Fletcher</p> <p>Confirmation No. 7356</p> <p>Attorney Docket No.: [92022-8727] 2152-3005</p>	<p>Certificate of Transmission/Mailing</p> <p>I hereby certify that this correspondence is being facsimile transmitted to the USPTO, transmitted via the Office electronic filing system, or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below:</p> <p><u>June 16, 2008</u>                      <u>/Jeffrey J. Lotspeich/</u> Date                                      Jeffrey J. Lotspeich Registration No. 45,737 Attorney for Applicant(s)</p>
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**REPLY BRIEF**

Mail Stop Appeal Brief – Patents  
Commissioner for Patents  
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Sir:

Pursuant to 37 CFR § 41.41, this brief is responsive to the Examiner's Answer of April 15, 2008. The filing of this brief is believed timely since it is being filed within the non-extendable two-month time limit (June 15, 2008 falling on a Sunday) set out in 37 CFR § 41.41(a)(1). Accordingly, Appellant submits the following:

**1. Introduction**

Appellant has carefully reviewed the various points set forth in the Examiner's Answer and submits that there remains a number of clear errors in the Examiner's rejections for which Appellant seeks review by the Board. Appellant will now address the various points raised by the Examiner.

**2. Extended pendency of the application**

Examiner's point A indicates that it is a moot argument that the present application has been pending for seven years. Appellant notes that the identification of the pendency of the application, to which the Examiner refers, was not intended as an argument for which the present appeal was sought. Instead such information was supplied to provide context to the Board.

**3. Suzuki event generator 11 does not generate MIDI signals**

Examiner's point A.1 includes several issues requiring comment. In particular, in response to Appellant's Appeal Brief, the Examiner's position in the Examiner's Answer can be distilled down to the following:

- (1) event generator 11 provides an "key-on/off event;
- (2) event generator 11 is an electronic keyboard which "inherently" has a MIDI interface;
- (3) the background section of the cited Suzuki patent (U.S. 5,981,859) describes a tone generator as having a MIDI interface; and
- (4) Suzuki discloses a MIDI interface 56.

As a first point, Appellant has never argued that Suzuki does not teach MIDI. To the contrary, Applicant has argued that performance event generator 11 does not teach the claimed "MIDI" feature.

As a second point, Appellant notes that it now appears that the Examiner is relying on a theory of inherency to support the rejection to the claims at issue. Nowhere has the Examiner set forth this position in the extensive history of prosecution of the present application. Appellant submits that the Examiner's Answer improperly includes a new

ground of rejection.<sup>1</sup>

As a third point, Appellant submits that even if event generator 11 is configured as an electronic keyboard, such a keyboard does not “inherently” have a MIDI interface. The law is well settled for when inherency may be relied upon to support a rejection. For instance, according to MPEP § 2112, “The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.”<sup>2</sup> “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’”<sup>3</sup> “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.”<sup>4</sup>

Appellant submits that even if event generator 11 is implemented as an electronic keyboard, it is not necessarily the case that such a keyboard has a MIDI interface. Is it the position of the Examiner that *every* electronic keyboard has a MIDI interface? The Examiner leads us to believe that this is the case; however, this is untrue. Electronic keyboards have been in existence long before the establishment of the MIDI standard, and there currently exists countless other types of keyboards which do not include any type of MIDI functionality. Electronic keyboards and MIDI do not necessarily go hand-in-hand, and thus, the Examiner’s new found reliance upon the purported inherent teachings of Suzuki are improper.

As a fourth point, page 10 of the Examiner’s Answer refers to the background

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<sup>1</sup> MPEP 1207.03 requires that a new ground of rejection must be specifically identified as such in the Examiner’s Answer. The Examiner has never relied upon inherency for support for the claim rejection. Appellant will therefore consider seeking the appropriate relief via a petition under 37 CFR § 1.181(a).

<sup>2</sup> MPEP 2112 citing *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (emphasis in original).

<sup>3</sup> *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted).

<sup>4</sup> *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

section of the cited Suzuki patent as disclosing “tone generators” which are interconnected via a MIDI interface. As a first comment, Appellant notes that the very next sentence of Suzuki following that which is relied upon by the Examiner specifically denounces the MIDI feature.<sup>5</sup> That is, Suzuki itself specifically disclaims the MIDI configuration that the Examiner relies upon for the rejection. As a second comment, the Examiner’s position is misplaced and has no bearing on the present rejection since performance event generator 11, not tone generator 12, is being used to reject the “MIDI control signal” feature of claim 30. That is, whether or not tone generator 12 has a MIDI interface is immaterial to the current rejection since tone generator 12 is not used to reject the identified element of claim 30.

As a fifth point, the Examiner relies upon MIDI interface 56 to support the rejection. The Examiner’s comments include a glaring and critical mistake. Applicant acknowledges that Suzuki discloses that network interface 56 may be MIDI interface. However, the mere mention of a MIDI interface does not render the claims of the present application anticipated. The Examiner fails to connect or provide any association between MIDI interface 56 and performance event generator 11. In other words, even if Suzuki discloses a MIDI interface 56, Suzuki never describes performance event generator 11 as having the MIDI interface 56. Suzuki simply describes MIDI interface 56 as being used for connecting to a sever computer (via LAN, Internet, and telephone lines).<sup>6</sup> Suzuki is absolutely silent with regard to MIDI interface 56 and an electronic keyboard or event generator 11. Suzuki cannot therefore teach or suggest the claimed feature as asserted by the Examiner.

As a sixth and final point, and as a clarifying matter, Appellant notes the Examiner’s position on page 10 of the Examiner’s Answer as “Anyone skilled in the art would know that MIDI allows key-on/off signals to be generated between instruments.” Appellant disagrees to the extent that such signals are not generated between instruments, but rather can be *exchanged* between instruments.

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<sup>5</sup> Suzuki col. 1, lines 45-57.

<sup>6</sup> Suzuki col. 7 lines 23-25 and 34-60.

**4. No signal flow from unit controller 13 (or generator 11) to generator 12**

Appellant now addresses Examiner's point A.2, which is set out on page 11 of the Examiner Answer. Recall that the claim element at issue is "a controllable low frequency oscillator comprising at least one parameter . . . wherein said value of said at least one parameter is determined by said incoming MIDI control signal."

It appears that the Examiner fails to appreciate Appellant's position with regard to this claim element. The Examiner sets out his position on pages 10-12 of the Examiner's Answer, and in particular, states that the Suzuki tone color information generator 12 teaches "at least one parameter" and event generator 11 teaches "said incoming MIDI control signal." Assuming *arguendo* that generator 12 teaches the claimed "at least one parameter," this parameter cannot be "determined by said incoming MIDI control signal" for the basic reason that there is no communication from generator 11 to generator 12. In other words, assuming *arguendo* that event generator 11 provides an incoming MIDI control signal, such a signal never reaches generator 12. Thus, the parameter of generator 12 cannot be determined by the so-called incoming MIDI control signal from event generator 11.

As a second point, contrary to the Examiner's comments on page 11, nowhere is it taught that the tone color information generator 12 operates in conjunction with the performance event generator 11. In fact, it is well established in the art that keys are used for pitch and dynamics, while the tone ("harpsichord," "organ," "grand piano," etc.) is selected by a completely independent set of buttons having nothing to do with the keyboard. In addition, the Examiner fails to identify the particular portion of Suzuki which provides such a discussion.

As a third point, Appellant notes the comments provided by the Examiner on pages 11 and 12, but is unable to discern the point being made. For instance, the Examiner states that control unit 13 generates a control parameter in accordance with a performance event generator and tone control information. This is irrelevant since the parameter at issue is the one purportedly being provided by generator 12, not the control parameter generated by control unit 13. A further example is the reference to "elements (10 and 11)" of Suzuki as set out on page 12 of the Examiner's Answer. Suzuki does not have element 10 so Appellant is not sure what is meant by the Examiner's comment. A still further example is

that the Examiner on page 12 states “in which the outgoing MIDI signals are responsive.” This is an entirely different claim element than what was argued in the Appeal Brief. Appellant argued the “incoming MIDI control signal” not the “outgoing MIDI control signal” addressed by the Examiner.

#### **5. Suzuki LFO 17 does not generate MIDI signals**

Appellant next considers Examiner’s point A.3, which is set out on page 12 of the Examiner’s Answer.

The Examiner first states “Looking at figure 2, clearly MIDI signals are input into the LFO from unit controller (13).” Appellant takes issue with this statement for two reasons. First, this is yet another new ground for rejection not previously made of record by the Examiner. Second, the Examiner does not identify the particular portion of Suzuki which states that the unit controller 13 provides MIDI. The Examiner simply refers to Fig. 2, but the figure does not state that the output from unit controller 13 is MIDI. The specification associated with Fig. 2 of Suzuki is similarly silent. There is no support for the Examiner’s position.

The Examiner continues: “The output from the LFO is a MIDI signal as well.” This, too, is absolutely false. Appellant provided extensive comments on this point on pages 15-17 of the Appeal Brief. The Examiner dodges this issue by summarily providing the conclusory statement that the output from LFO 17 is MIDI.

As yet another new ground of rejection, the Examiner now relies upon the notion that since Suzuki mentions MIDI interface 56, then such a disclosure somehow permits a completely separate component, LFO 17, to generate an outgoing MIDI control signal. This is a giant technological leap which is wholly unsupported by Suzuki. Regardless of the existence of MIDI interface 56, the fact remains that LFO 17 does not generate MIDI.

**6. Position of the USPTO contains contradictory statements**

Appellant next considers Examiner's point A.4, which is set out on page 12 of the Examiner's Answer.

The Examiner's response to Appellant's Appeal Brief is disappointing. On page 17 of the Appeal Brief, Appellant identified various points made by the Examiner for which clarification is necessary. Unfortunately, the Examiner failed to seize this opportunity to clarify the record, and instead offered the unhelpful statement: "The references clearly meet these broad limitations." Appellant seeks the Board's assistance in this matter since the inconsistencies identified in the Appeal Brief prevent Appellant an opportunity to fully respond to the rejection since it is unclear as to how the claim is being rejected.

**7. Unjustified prosecution delay & no MIDI control signals in Sgroi**

Appellant next considers Examiner's point B.1, which is also set out on page 12 of the Examiner's Answer.

First, the Examiner contends that "unjustified prosecution delay" is not an appealable issue. The Examiner misses the point and merely addresses a bolded heading provided in the Appeal Brief. The issues for which Appellant seeks review were clearly identified on page 19 of the Appeal Brief. These errors are (1) the record contains inadequate support for the latest position offered by the Examiner; and (2) the Examiner never provided a response which addresses Appellant's position, in violation of the requirements of MPEP 707.07(f).

In addressing the first error, page 12 of the Examiner's Answer indicated that support for the rejection to the claimed MIDI signals can be found in Figs. 2-4. The latest Office Action and the Examiner's Answer similarly address the claim rejections with regard to Sgroi. However, both simply refer to various figures of Sgroi without providing any reasoning or explanation as to how the Sgroi patent need be interpreted to arrive at the claimed invention. Applicant cannot discern how Sgroi is being applied since the Examiner has failed (repeatedly) to provide such information.

Notwithstanding the above, Appellant provides the following additional comments with regard to the shortcomings of Sgroi. It appears that the Examiner relies upon the output of MIDI source 22 of Fig. 2 as providing an "incoming real-time MIDI control

signal.” However, the signal of MIDI source 22 is simply the output (MIDI out 66) of processor 62 (Fig. 4). See Sgroi col. 3 lines 56-57. The Examiner therefore uses the same signal (MIDI out 66) as being both the incoming and the outgoing MIDI control signal. Clearly, this is not possible.

As a final clarifying point, Appellant notes that the Examiner indicated that the comments to the Fay reference are moot since that reference was not used in the rejection. Appellant submits that the Fay reference was not argued in the present Appeal Brief. Instead, the Appeal Brief included a passage of the Office Action of 7/7/05 in which the Fay reference was recited. No separate argument with regard to Fay was included in the Appeal Brief.

## **8. Multiplication is not “fast adding”**

Appellant next considers Examiner’s point B.4, which is also set out on page 13 of the Examiner’s Answer.

There is significant contention with regard to the claimed “multiplying” term. To facilitate the Board’s understanding of Appellant’s position, Appellant provides the following examples which highlight the differences between multiplying and the so-called “fast addition” coined by the Examiner.

In analog electronics, summing can be done with resistor networks (voltage summing), current nodes (current summing) and op-amp based enhancements of these, while multiplication of electrical signals requires far more specialized circuitry such as transconductance amplifiers, small-signal diode bridges, servo-controlled potentiometers, etc. In digital electronics addition involves AND gates and XOR gates, while multiplication involves far more complex logic circuitry or ALU procedures such as barrel shifting.

In algebraic mathematics, addition and multiplication are separate operations that define algebraic rings and fields. If addition and multiplication were the same, there would only be a single operation, resulting in only an algebraic group with algebraic rings and fields being impossible.

In the realm of MIDI systems, MIDI values range from 0 to 127. Multiplication of two MIDI values A and B to produce a MIDI output requires normalizing by 127, that is,



the outgoing MIDI value would be given by  $\lfloor A * B / 127 \rfloor$  where  $\lfloor * \rfloor$  is a floor, ceiling, or rounding function. This allows, for example, one of the MIDI signals having a value of 63 to halve the value of the other MIDI signal. In another example, MIDI signal B can have the value 10, so the outgoing MIDI signal has the value  $\lfloor A * 10 / 127 \rfloor$ . In the context of the claims of the present application, Appellant inquires as to how can this be the same as adding two MIDI signals? How is this ‘fast addition’? The term “fast addition” makes no sense in this context.

With all due respect to the Examiner, engineering cannot be done with grade-school concepts. In (integer) counting math where children learn about multiplication for the first time, viewing multiplication as “fast addition” of an integer number of another number is a useful learning tool. But this pertains only to that simple case. How is  $\lfloor 10 * 10 / 127 \rfloor$  fast addition? How is  $2/7 * 3/8$  fast addition? How is the square root of two multiplied by the cube root of three fast addition? How is the product of two imaginary numbers fast addition? How is the multiplication of two matrices fast addition of the matrices?

The “fast adding” accumulation or summing which Suzuki purportedly provides cannot be equated to the “multiplying” recited in the rejected claim. Appellant submits that the Examiner’s position requires the claim term to be construed in a manner that is inconsistent with Appellant’s specification and as one of ordinary skill would understand this term.

#### **9. Rejection does not address independent claims 51-57**

Appellant next considers Examiner’s point B.5, which is also set out on page 13 of the Examiner’s Answer.

Page 22 of the Appeal Brief includes several features which are recited by independent claims 51-57, but were not addressed in the Office Action. The Examiner’s Answer fails to address the points raised by the Appellant.

The various combinations recited in the rejected claims are explicit MIDI control signal transformations, not repeated language or vaguely changed language. One skilled in the art of MIDI systems clearly understands that, for example, MIDI note number values, MIDI note velocity values, and MIDI continuous controller values are involved in the

control of completely different things, and a listing of transformations among them are not repeated language or vaguely changed language.

**10. Claims currently in condition for allowance**

Appellant submits for the reasons set out in both Appellant's Appeal Brief and this Reply Brief, the rejections are improper and that all the claims pending in the present application are allowable over the asserted references. Appellant respectfully requests that the Board of Patent Appeals and Interferences reverse the decision rejecting claims 30-60 and direct the Examiner to pass the case to issue.

Respectfully submitted,

Date: June 16, 2008

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